# SOME NOTES ON THE BURSTINESS OF DATA SOURCES, AND ITS IMPACT ON THE PERFORMANCE OF QUEUEING NETWORKS

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Abstract

In this contribution, we will define and explore the so-called burst factor, a parameter that is related to the asymptotic variance of a data source, and which is defined in a generic setting. We will show that this parameter is well suited to quantify the burstiness of such a source. In addition to being intuitively simple to understand and fairly easy to compute, this parameter has the attractive properties of being scalable, and easily allowing the superposition of independent sources. From the results that we deduce, both analytically and numerically, and which are valid in a correlated non-Markovian-arrivals and multiserver setting, we can conclude that this quantity is one of the key parameters in the performance assessment and dimensioning of data buffers in a network. This will be demonstrated by means of simulation results of a buffer fed by (a superposition of) MPEG-4 video sources. Also, for some specific scenario's concerning the arrival process and routing of data packets (in particular, slot-based and busy-period-based routing will be considered and analysed), we will show some theoretical and numerical results on how the burstiness at the input of such a queue translates into the burstiness of the output process.